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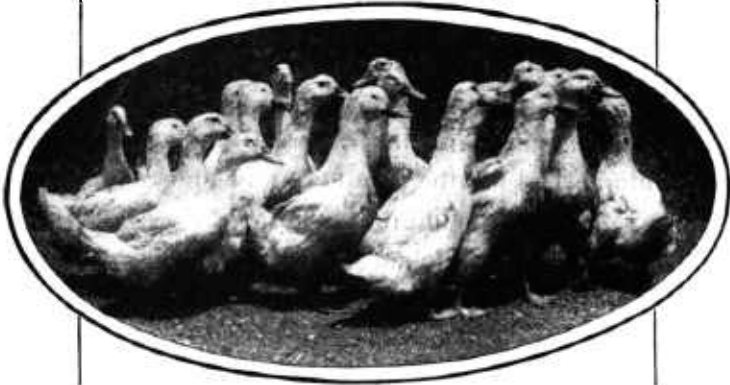
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DUCK RAISING



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UNITED STATES
DEPARTMENT OF
AGRICULTURE

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DUCK RAISING is conducted quite successfully both as a side issue on general farms and as a special business on a large scale.

The Pekin is the most popular breed for the production of meat, and the Indian Runner is the most popular breed for the production of market eggs.

The period of incubation for ducks' eggs is 28 days. The eggs may be hatched successfully by either natural or artificial methods.

Young ducks forced for rapid growth and marketed at from 8 to 12 weeks of age are called green ducks. They weigh from 5 to 6 pounds and are the principal source of income on commercial duck farms.

Pekin ducks kept for breeding should be fed a laying ration about December 1. Indian Runner ducks kept for the production of market eggs should be fed a laying ration throughout the year.

The demand for market ducks and for ducks' eggs at good prices is usually limited to the large cities and is not nearly as general as the demand for hens' eggs or for chickens.

Contribution from the Bureau of Animal Industry
JOHN R. MOHLER, Chief

Washington, D. C.

Reprint, June, 1921

DUCK RAISING.

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ACCORDING to the census of 1910 there were 2,906,525 ducks in the United States, valued at \$1,567,164, showing a decrease in number of nearly 40 per cent as compared with 1900. It should be stated, however, that the animal census of 1900 was taken June 1, and that of 1910, April 15, which fact would considerably reduce the above percentage, although only fowls 3 months old or over were reported in both cases. Ducks were reported on only 7.9 per cent of the farms in the country and are most numerous in the following States, arranged according to their production: Iowa, Illinois, New York, Pennsylvania, Missouri, Tennessee, Indiana, Kansas, Oklahoma, Arkansas, and Ohio, the number ranging from about 225,000 head in Iowa to 106,000 in Ohio. New York is the only one of these States which shows an increase in the number of ducks, while all the others show a marked decrease. Long Island, N. Y., contains a number of large commercial duck farms which apparently are quite successful. It would appear, therefore, that commercial duck farms are increasing somewhat, while the production of ducks on general farms as a side issue is decreasing, especially in the Middle West.

There are 11 standard breeds of ducks which have been admitted to the American Standard of Perfection. These may be divided into three classes: (1) the meat class, including the Pekin, Aylesbury, Muscovy, Rouen, Cayuga, Buff, and Swedish; (2) the egg class, which includes the Indian Runner; and (3) the ornamental class, composed of the Call, the Crested White, and the Black East India. The common or so-called "puddle" duck is kept on many farms in the Middle West and South and is generally of small size, a poor layer, and an undesirable type of market duck. Excepting the Muscovy, all of our economic breeds of ducks are said to have originated from the Mallard, or common wild duck.

THE MEAT CLASS.

THE PEKIN DUCK.

This breed is kept almost exclusively by commercial duck farmers in the United States who make a specialty of producing "green" ducks; it is also the most popular breed on general farms. Green ducks are ducklings which are grown rapidly and marketed when they are from 8 to 12 weeks old, when they weigh about $4\frac{1}{2}$ to 6 pounds apiece. If not sold at that time, the market quality of their flesh depreciates, while their weight decreases, and it takes several weeks to get them back into good market condition.

The Pekin duck (fig. 1) originated in China and was introduced into this country about 1875, where it soon became the most popular breed on commercial duck farms. The introduction of the Pekin practically marks the beginning of intensive commercial duck farming in the United States. This breed has a creamy white plumage, a long, broad, and deep body, with a full breast and deep keel (the part

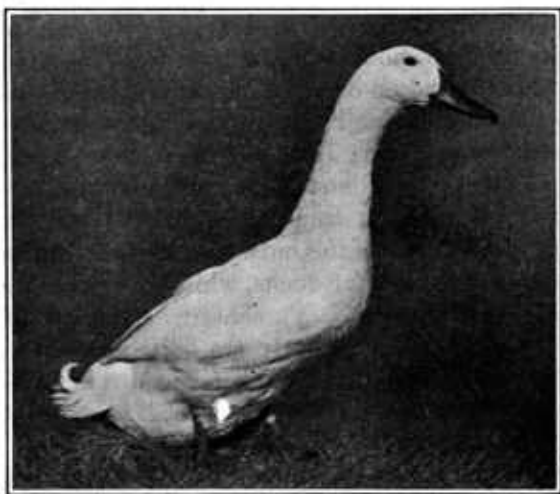


FIG. 1.—Pekin drake.

extending backward from the breast). The color of the skin is yellow, the shanks and toes should be reddish-orange, and the bill orange-yellow, free from black. The standard weights of the adult drake and duck are 9 and 8 pounds, respectively. Pekin ducks are hardy, are fair layers, practically nonsitters, and espe-

cially adapted for the production of flesh. They are very docile, easily confined by low fences, and well adapted either for commercial duck farming or as a side issue on general farms.

THE AYLESBURY DUCK.

The Aylesbury duck (fig. 2) is a native of England, in which country it is more popular than the Pekin. It is a large, white duck having the same standard weights and general shape as the Pekin. This breed resembles the Pekin in many ways, but has never become popular in this country, although it has been tried on some of the

larger duck farms. The Aylesbury appears to have the same qualities which make the Pekin our most popular market duck, and could be kept with success either on commercial duck farms or on general farms. It has a pure white plumage, while the Pekin is creamy white in color.

THE MUSCOVY DUCK.

There are two standard varieties of Muscovy ducks, the white and the colored. This breed originated in South America and is considered by some writers to be of a different species from our other ducks, although in some cases it may be crossed with our domestic varieties of ducks, producing hybrids which are sometimes fertile. The head and face of the

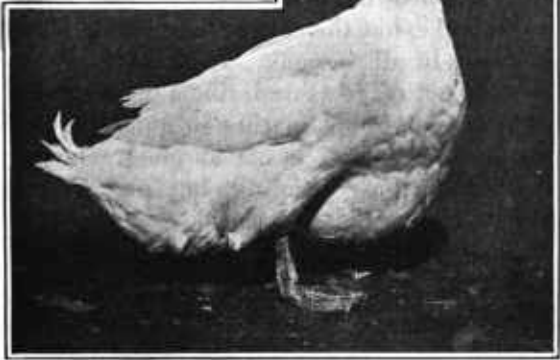


FIG. 2.—Aylesbury drake.

Muscovy (fig. 3) are partly bare, with red, rough, carunculated skin. It has a long, broad body, with greater breadth but less depth and less keel development than the Pekin. The drake should be at least one-third larger than the duck, as the standard weight of the adult drake is 10 pounds and that of the duck 7 pounds. The white variety has a pure white plumage, pale orange or yellow legs, and a pinkish, flesh-colored beak. The breast, body, and back of the colored Muscovy are a lustrous blue-black, broken with some white. The wing coverts are also a lustrous blue-black with splashes of white, and the tail is black. The bill is pink, shaded with horn, and the legs may be yellow or a dark leaden color.

Muscovy ducks are not well adapted for commercial duck farming, as they are poor layers, and they are not well suited for marketing because of the difference in size between the duck and the drake. Moreover, they are good fliers and can readily fly over ordinary poultry fences. However, the breed is a wide forager, requires very little care, and can be kept with fair success on general farms.

THE ROUEN DUCK.

The Rouen duck (fig. 4) derives its name from the city of Rouen in northern France, and was probably derived from a similar type of

common or native duck by selection. In shape and type this breed is quite similar to the Pekin and has the same size and standard weights. The eyes are dark brown and the head and upper part of the neck of the male are green, with a white ring around the neck, while the back is gray mixed with green near the neck, shading into a lustrous green near the tail. The lower part of the body is gray and the breast is claret colored. The tail and wings are gray and brown mixed with some green, while the wings have a wide purple bar with narrow white bars on either side of the purple, which are exposed when the wing is folded. The shanks and toes are an orange or orange-brown color. The duck is barred on the wings similarly to the drake, but the color of the plumage of her body is brown with penciling in all sections. This breed has very handsome markings, but does not make as desirable a market duck as the Pekin or Aylesbury, as it does not mature so quickly, besides having dark-colored pin feathers, and it is not as good a layer. It is not adapted for commercial duck farming, but may be kept successfully by the fancier or on general farms.

THE CAYUGA DUCK.

The Cayuga duck derives its name from Cayuga County, N. Y., where it probably was developed about 1850. It resembles the Pekin in shape, but the standard weight is 1 pound lighter. The Cayuga is said to be a good market duck, but is not widely distributed, and it is not as good a market duck as the Pekin because of its dark plumage. They are fair layers and may

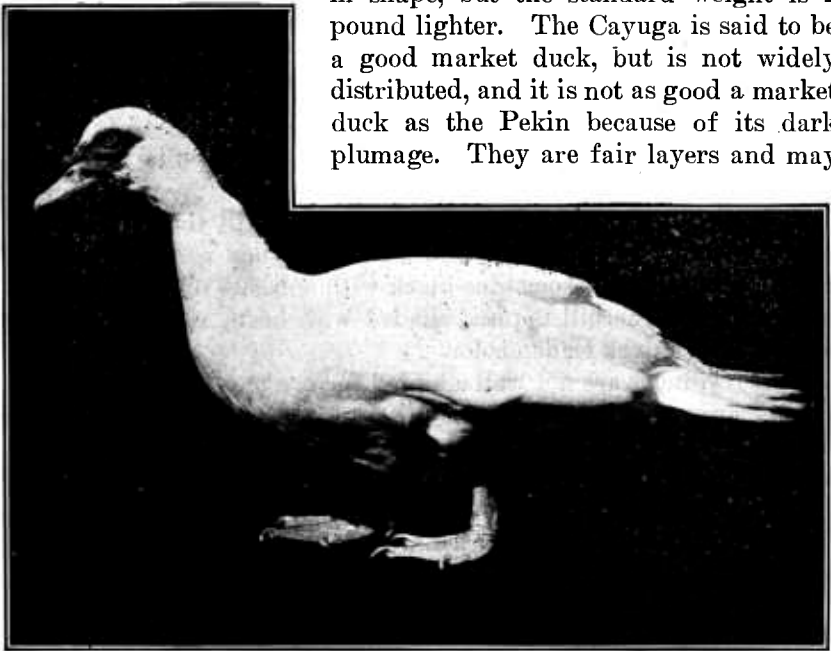


FIG. 3.—White Muscovy drake.

be raised with success on general farms. The plumage is a greenish black in all sections of the body, except that the drake may have brown flight feathers; the eyes are dark brown, and the shanks and toes are a black or dark slate color.

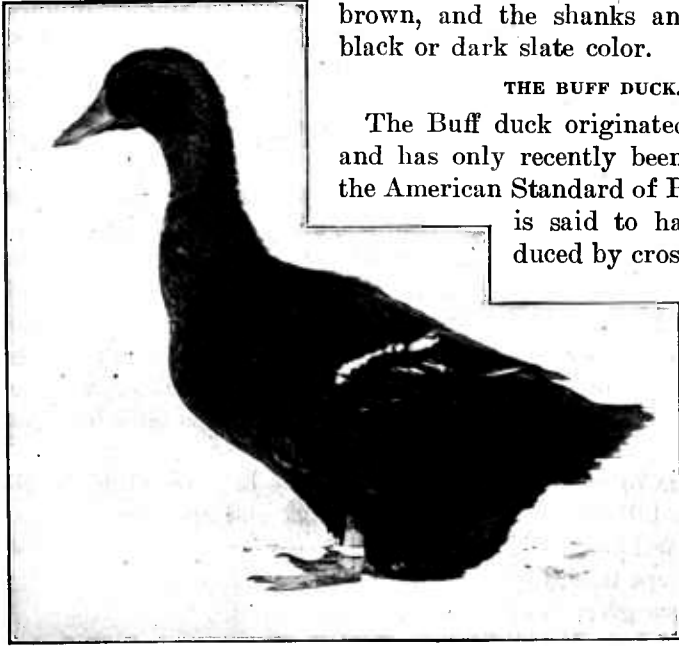


FIG. 4.—Rouen duck.

THE BUFF DUCK.

The Buff duck originated in England and has only recently been admitted to the American Standard of Perfection. It is said to have been produced by crossing the Run-

ner, Aylesbury, and Rouen, and is intermediate in type between the Pekin and the Rouen. The standard weights are 1 pound lighter in

each class than the Pekin. It has been developed for the production of eggs and is said to be a good producer and also makes a fair market or table duck. This breed would appear to be a good one to keep on general farms for both egg and meat production. This breed has good length of body, which is broad, deep, and well rounded. The plumage is an even shade of rich fawn buff, with the exception of the head and the upper portion of the neck in the drake, which should be seal brown.

THE BLUE SWEDISH DUCK.

The Blue Swedish duck probably originated in Germany, although blue ducks are found in several European countries. This breed resembles the Pekin in type, but is smaller, with the same standard weights as the Cayuga, except that both the young drake and the young duck are one-half pound lighter than in that breed. The plumage of the Blue Swedish is blue in all sections, except that it has a white bib on the neck and the two main flight feathers are pure white. This breed is not widely distributed in this country and is not as well adapted for commercial purposes as a white duck; it should, however, be a successful variety for the general farm.

THE EGG-LAYING CLASS.

THE INDIAN RUNNER DUCK.

Writers disagree as to the place of origin of the Indian Runner or Runner duck, some claiming that it originated in East India, while others assert that it is a selected type of a duck which is common in Holland, Belgium, and France. There are three standard varieties of Indian Runner ducks—the Fawn and White, the White, and the Penciled. The Fawn and White is fawn or gray and white, with a white neck and a line of white running up to the eyes and extending around the bill. The back and shoulders are fawn, and upper part of the breast and wings are fawn, but the lower part is white. The breast is full; the body is long and narrow and carried erect, with no indication of a keel, the body somewhat resembling that of a penguin in shape. The shanks and toes are orange red and the bill of the young drake is yellow, which later becomes greenish yellow, while a young duck has a yellow bill spotted with green, which later becomes a dull green.

The plumage of the White variety (fig. 6) is pure white in all sections. The bill is yellow and the shanks and toes are orange. The color of the Penciled variety (fig. 5) resembles that of the Fawn and White except that the head of the male is a dull bronze green and white and the back has a soft fawn ground, finely stippled with a darker shade of fawn. The upper section of the breast is dark fawn, the body a medium fawn, and the tail a dull bronze green. The head of the female is a medium fawn and white, while the white markings in the plumage resemble those of the male. The colored markings are a medium fawn throughout, with a light line of fawn color running around the edge of each feather, the border being a darker shade.

The Indian Runner duck is much smaller than breeds of the meat type, the drake having a standard weight of

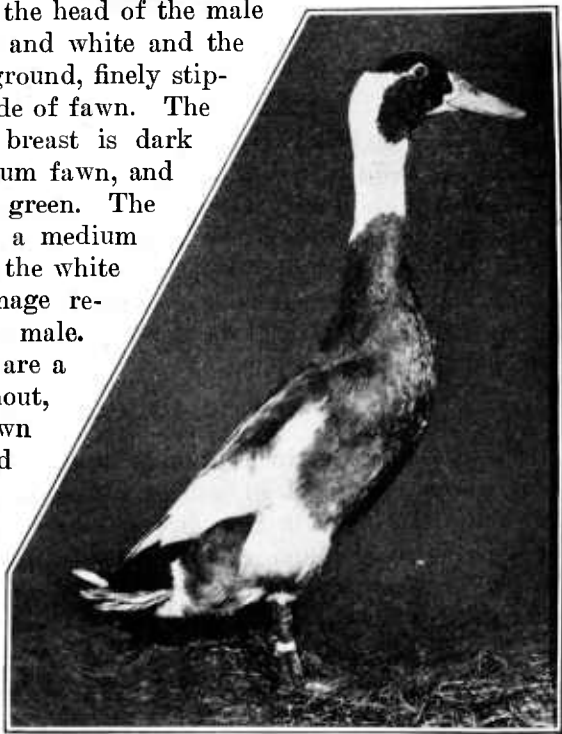


FIG. 5.—Penciled Indian Runner drake.

4½ pounds and the duck 4 pounds. During the past few years the merits of this breed have been advertised extensively and the number of Indian Runner ducks has increased. They are considered the best layers of all our standard breeds of ducks, and hold the same relative position in the duck family that the Leghorn does among the breeds of domestic fowl. This breed is frequently claimed to be a higher egg producer than the White Leghorn, but this claim does not appear to be well established. It lays a good-sized white egg considerably larger than a hen's egg, and is claimed to be a small eater. Indian Runner ducks are active, are good foragers, non-sitters, and hardy. Their skin is yellow and they make good broilers, weighing from 2½ to 3 pounds apiece at about 6 weeks of age. They are not as well adapted for the production of large green ducks as the Pekin, but may be kept to advantage on Pekin-duck farms to produce ducklings of broiler size.

The Indian Runner is a good breed for the general farmer and is one of the best for duck farms devoted primarily to the production of market eggs. The keeping of ducks for the production of eggs for market appears to be growing more rapidly in the South than in the East or Middle West. The business of the production of duck eggs for market is discussed in the latter part of this bulletin, under "Marketing ducks' eggs."



FIG. 6.—White Indian Runner drake.

THE ORNAMENTAL CLASS.

THE CALL DUCKS.

There are two varieties of Call ducks, the Gray and the White. They are the bantams of the duck family which are kept for exhibition or for fancy purposes and used as decoys in wild-duck shooting.

This breed is said to be especially good for the latter purpose when crossed with the wild Mallard or with the common "puddle" duck. The Gray Call has the color markings of the Rouen and closely resembles the wild Mallard. The plumage of the White Call is pure white in all sections. Ducks of this breed have no standard weights, but are bred and selected for small size.

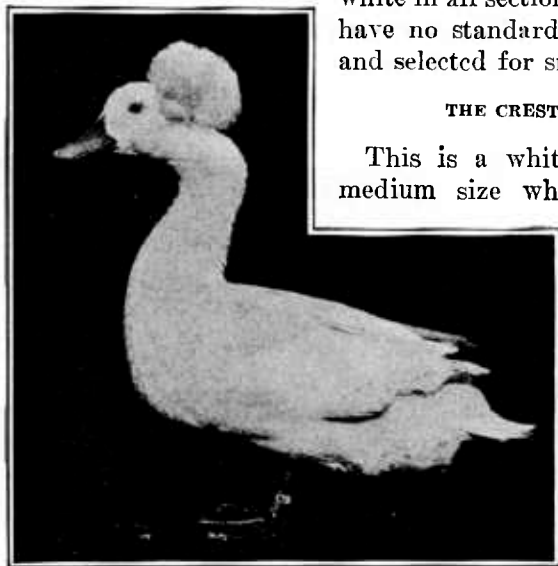


FIG. 7.—Crested White drake.

THE CRESTED WHITE DUCK.

This is a white ornamental duck of medium size which has a crest. The standard weights are a pound less than those of the Cayuga duck (see fig. 7).

THE BLACK EAST INDIA DUCK.

The Black East India duck is of practically the same size and type as the Call ducks and is kept entirely for ornamental purposes.

The plumage is a deep black, with a brilliant greenish tint. This duck has very shy habits and does not breed well in confinement. Both the Crested White and the Black East India duck are rare in this country.

THE MANDARIN AND WOOD DUCKS.

The Mandarin and Wood, or Carolina, ducks, which are the most ornamental of the small breeds of waterfowl, are not included in the American Standard of Perfection. The plumage of these breeds is handsomely marked and contains several brilliant colors. Both of these varieties are commonly kept in parks and zoological gardens with other ornamental waterfowl.

DUCK FARMING.

Duck raising on a large scale has been developed as a special business to a considerable extent on Long Island (see fig. 8) and in sections within easy shipping distance of New York City, Boston, and Philadelphia. Intensive duck farming on a large scale has, in fact, been more successful than intensive chicken raising, since Pekin

ducks, especially, stand confinement well, are more easily brooded, and are less subject to disease than chickens. Artificial methods of hatching and rearing and labor-saving machinery have been used very successfully on duck farms. The demand for table ducks at good prices is largely limited to the large cities and is not nearly as general as the demand for chickens or fowls. The demand, however, appears to be gradually increasing, but this lack of wide market materially influences the establishment and growth of duck farms. The market conditions should be studied carefully before a large investment is made in ducks. A prejudice against duck flesh and eggs exists in many places, caused probably by eating the common or "puddle" duck, which has been allowed to roam in places where filthy conditions exist.

Ducks can be raised with success and at a profit on general farms, but do not appear to be as well adapted as a source of income to average farm conditions as fowls, although they serve to add variety, both of meat and of eggs, for the farmer's table. If the demand for ducks, and especially for duck eggs, increases, breeds of ducks which are good layers should be profitable on farms, particularly where there is good pasture land containing a stream or any running water. Farmers rarely give the necessary care to their ducklings, either in feeding or in marketing, to be able to cater to the trade in fancy green ducks.

LOCATION AND ARRANGEMENT.

Duck farms are usually located on light, sandy soil, generally on sloping land, where the droppings will leach freely into the soil, so that the land keeps sweet and clean. The farm should have good

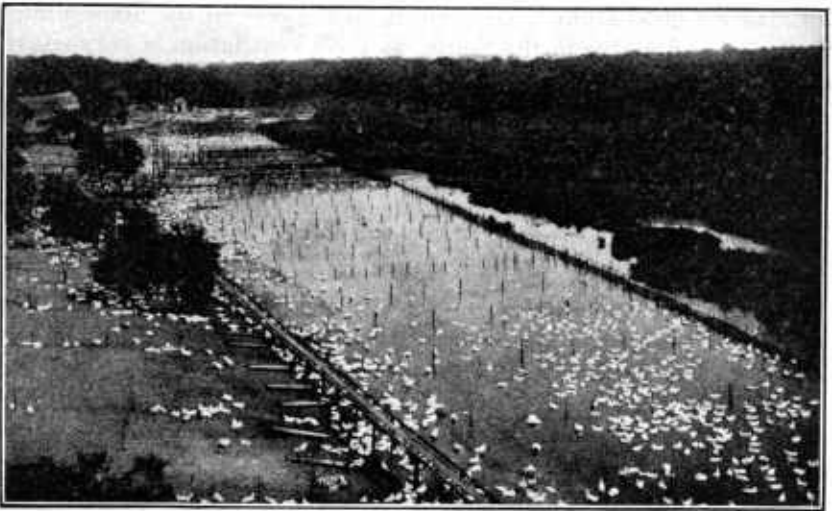


FIG. 8.—Large duck farm on Long Island.

shipping facilities to aid both in shipping products and in buying supplies. The arrangement of the buildings should be planned to economize labor and allow for future increase of the equipment. The incubator cellar should be convenient to the brooder house, the brooder house to the growing house and pens, and these buildings to the killing house. The pens in the houses, the outside yards, and the arrangement of the buildings should be planned so that the ducks may be easily driven from house to house if desired. The feed room or house should be centrally located. Convenient watering arrangements are essential where large numbers of ducks are kept, as they require a large amount of drinking water. While ducks may be kept successfully under very intensive conditions, it is advisable to allow considerable yard space. Double yards, which may be rotated and planted to quick-growing crops, such as oats, wheat, and rye, are good for intensive duck farms. It is advisable to have a pond or stream for the breeding ducks, as they usually give better fertility under these conditions, although on some successful duck farms the ducks are always kept on dry land. The young green ducks on some farms which have a pond are not allowed to go into the water except to bathe and clean their feathers just before marketing. Other growers, however, allow the green ducks free access to ponds or streams until they are marketed.

HOUSES.

Simple buildings similar to henhouses are used for the breeding ducks. A shed-roof house from 12 to 15 feet deep, 7 feet high in front and 4 feet in the rear, makes a good building for this purpose. A good-sized muslin curtain and one window in the front of each pen makes a good front. An opening in the rear of the house under the eaves is advisable in the South, as good ventilation is very essential for ducks. The walls may be made of matched lumber or of barn boards 12 inches wide with the cracks covered with battens 3 inches wide, or rough lumber covered with felt paper may be used. The roof should be water-tight and covered with roofing paper. A dirt floor raised 4 to 6 inches above the ground level is satisfactory on light, well-drained soil. Board floors raised 6 to 8 inches above the ground and covered with 4 inches of sand or dry earth may be used. Fences and partitions should be from 2 to 2½ feet high. An alley is not necessary for breeding ducks in houses which are not over 15 feet deep, but is generally used in brooder houses and in many growing houses. Plenty of litter should be used on the floor, and the ducks should be allowed to make their own nests, because they are more apt to break their eggs if nest boxes are used. In estimating the size of the house or of the pens allow 6 to 7 square feet of floor space for each duck.

SELECTING AND MATING.

Ducks are usually mated in flocks of about 30 females with 5 or 6 males, as the latter do not fight each other. (See fig. 9.) The number of males may be reduced to 1 for every 7 females about the first of March and again changed a month later to 1 male for 8 to 10 females. Active, healthy females of medium size should be used for breeding; that is, weighing about 8 pounds when mature. Only mature females should be used as breeders. Select ducks with short necks, medium long bodies, flat backs, and of good depth to the keel bones. Watery eyes are usually a sign of weakness in ducks. The drake is usually coarser and more masculine in appearance than the duck and has a distinct curl in his tail feathers. Ducks should usually be sold after they are 2 years old, although the best breeders or layers may be kept over their third year. In handling ducks pick them up by their necks rather than by the legs, as the latter are apt to break easily. Ducks lay their eggs early in the morning, and should be confined to the house or pen until 9.30 or 10 o'clock in the morning. If allowed to roam early in the morning they may lay in a pond or stream and the eggs may be lost.

INCUBATION.

The period of incubation for ducks' eggs is 28 days, except for the Muscovy duck, which is 33 to 35 days. The eggs may be hatched either naturally or artificially, but on practically all of the large duck farms the hatching is done in incubators. Most of these farms



FIG. 9.—Breeding flock of Pekin ducks.

started by using lamp incubators of from 200 to 400 egg capacity, but since the introduction of the mammoth incubator the lamp machines have been replaced by the latter on many farms. Strong, fertile eggs are a prime essential in good hatching and are obtained only from stock properly mated and kept under the best possible conditions to secure health and vigor. Eggs from overfat breeding stock do not usually produce a large percentage of strong ducklings. Pekin and Indian Runner ducks rarely sit; consequently, if natural methods of incubation are to be used the eggs are usually hatched under hens. Ducks' eggs should be washed if dirty, which does not appear to injure their hatching qualities.

Before setting a hen dust her thoroughly with insect powder. In applying this powder hold the hen by the feet, with her head hanging down, and work it thoroughly into the feathers, giving special attention around the vent and under the wings. If several hens are sitting in the same room, confine them on the nests, only allowing them to come off once a day for feed and water. Sitting hens should be fed whole or cracked grains, such as corn or wheat. Place 9 to 11 ducks' eggs under a hen, depending on her size and the season of the year, using the smaller number of eggs in cold weather and the larger number in warm weather. Confine the hens at hatching time and do not disturb them until the hatch is completed, unless they become restless, when it may be best to remove the ducklings that hatched first. Hens must be well cared for in hatching ducks' eggs, as the period of incubation is a week longer than that of hens' eggs. It usually takes ducklings from 24 to 48 hours to hatch after they pick the shells; therefore it is advisable to allow the hen to get off the nest for feed and water when the first ducklings pick the shell and then confine her to the nest until the hatching is over. Ducks' eggs need more moisture than hens' eggs at hatching time, as it takes the ducks much longer to get out of the shell. The eggs should, therefore, be sprinkled with warm water previous to hatching.

Incubators for hatching ducks' eggs are usually kept at a slightly lower temperature than for hens' eggs. Keep the machine at 102° F. for the first three weeks and 103° F. for the last week. The temperature may go above 103° F., and sometimes will go as high as 104° F. at hatching time. Operate the machines according to the manufacturer's directions. It is usually advisable to supply moisture for ducks' eggs during the last week or 10 days of incubation. This depends upon the make of the incubator, on the climate, and especially on the humidity of the place where the incubator is operated. Many methods are used to supply moisture in incubation, such as sprinkling the eggs with warm water heated to about 100° F., or placing a pan of water, a receptacle containing moist sand, or a wet sponge below

the egg tray. Another common method of supplying moisture is to sprinkle or soak the floor of the incubator room or to place a pail of warm water under the lamp. It is advisable to shut the machine up tightly at hatching time, so that the moisture will be retained in the incubator, as it takes ducks' eggs some time to hatch after the shells are pipped.

The eggs are usually turned twice daily after the second and through the twenty-sixth day and cooled once daily after the seventh and through the twenty-sixth day. After turning the eggs reverse the egg trays end for end and from one side of the machine to the other in 2-tray incubators. The length of time to cool eggs depends upon the temperature of the incubator room and the day of incubation, but a good general rule is to leave the eggs out of the incubator until they feel slightly cool to the hand, face, or eyelid. When the ducklings are all hatched remove the egg tray and open the ventilators according to the manufacturer's directions, but keep the ducklings in the incubator from 24 to 36 hours after the hatch is over before removing them to the brooder.

TESTING EGGS.

All eggs should be tested at least twice during incubation, preferably on the seventh and fourteenth days, and the infertile eggs and those with dead germs removed. Dead germs in duck eggs decompose very rapidly and are often detected by their odor and removed from

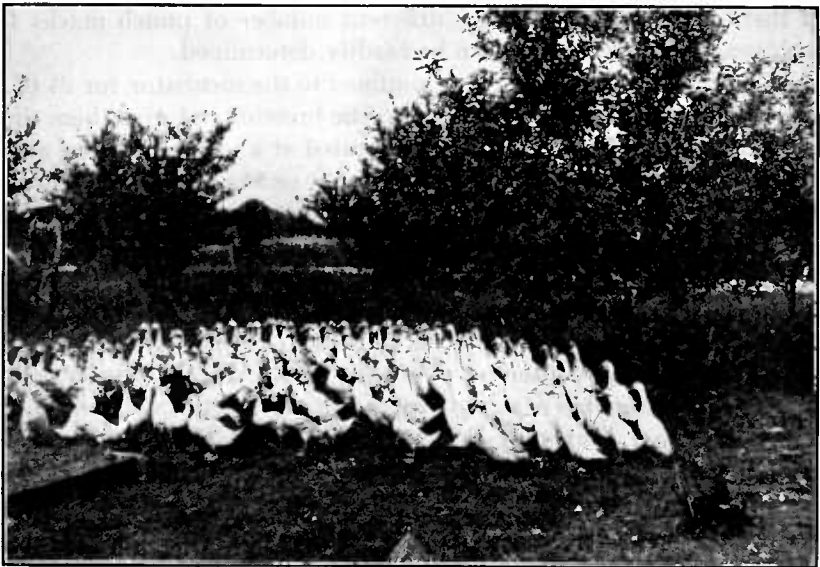


FIG. 10.—Flock of white Indian Runner ducks.

the incubator. Duck eggs having pure white shells are often tested as early as the fourth or fifth day and the infertile eggs sold to bakers. Infertile eggs make good feed for ducklings, and are often used for culinary purposes. The eggs are tested with the large end up, so that the size of the air cell may be seen, as well as the condition of the embryo. Testing should be done in a dark room. The infertile egg when held before the tester will look perfectly clear, much the same as a fresh egg, while a fertile egg will show a small dark spot known as the embryo, with a mass of little blood veins extending in all directions, if the embryo is living, but if dead the blood settles away from the embryo toward the edge of the yolk, forming in most cases an irregular circle of blood known as a blood ring. The eggs containing strong, living embryos are dark and partly filled up after the fourteenth day, and show a clear, distinct line of demarcation between the air cell and the growing embryo, while dead germs show only partial development and lack this clear, distinct outline.

BROODING.

Ducks are much easier to brood artificially than chickens, but they may also be raised under hens successfully. If raised by the latter method, it is advisable to confine the hens and allow the ducklings free range, as the hens are apt to wander too far away with their broods. Ducklings which are to be sold as green ducks are not usually allowed much range, but are fed heavily and forced for rapid growth. The ducklings which are to be kept for breeding should have the web of their feet punched, using a different number of punch marks for each year so that their age can be readily determined.

After the ducklings have been confined to the incubator for 24 to 36 hours after hatching, remove them to the brooder and give them their first feed. The brooder should be operated at a temperature of about 95° F. at first and gradually reduced to 80° or 85° within a week or 10 days. The temperature may be reduced quite rapidly, depending on the season of the year. Aim to keep the ducklings comfortable. When uncomfortable they will crowd together and try to get nearer the heat, but if comfortable they will spread out under the hover. The ducks should be confined around the hover at first until they have learned to return to the source of the heat. In the winter green ducks usually require heat until they are marketed, but later in the season artificial heat may be removed after 2 to 4 weeks. Cool brooder houses without any heat or with only a few hot-water pipes on the rear walls of the building are used early in the spring for the ducklings after they are 4 to 6 weeks old.

The brooders and brooding systems used for chickens give good results in rearing ducklings. Hot-water-pipe systems have probably

been used more successfully for brooding ducks than for chickens and are used extensively by commercial duck growers. Ducklings do not require as high temperatures as chickens, and very loose hovers are generally used over the hot-water pipes.

Individual brooders or hovers, holding from 25 to 100 ducklings, and coal, gasoline engine, or distillate oil stove brooders with a capacity varying from 200 to 1,200 may also be used successfully in brooding ducks. Both single and double brooder houses are used extensively on duck farms. In single brooder houses 15 to 16 feet wide the aisle is usually in the rear of the house, with hovers arranged next to the aisle. Double brooder houses are generally 25 to 30 feet wide and have a center aisle, with hovers either under or on both sides of the aisles. The aisles are usually 3 feet wide and the brooder pens 6 to 8 feet in width. From 75 to 100 ducklings are kept in each pen in



FIG. 11.—Duck brooder house.

the brooder house. The style and construction of the brooder house depend on the brooding system used. If ducks are raised in warm weather, feeding sheds, the sides of which are open a foot or more above the ground, are commonly used. Brooder-house yards are from 30 to 100 feet deep, with divisions corresponding in width to the pens in the house. (See figs. 11 and 12.)

METHODS OF FEEDING.

Ducks may be fed on the rations recommended for fowls and chickens, but better results are usually secured by feeding more green and vegetable feeds and a larger proportion of mash. Eggs from Pekin ducks are used largely for hatching, and the profit is secured in producing green ducklings; therefore these ducks are fed a maintenance ration after they stop laying in the summer until about December 1, when a laying ration is given and the amount of mash

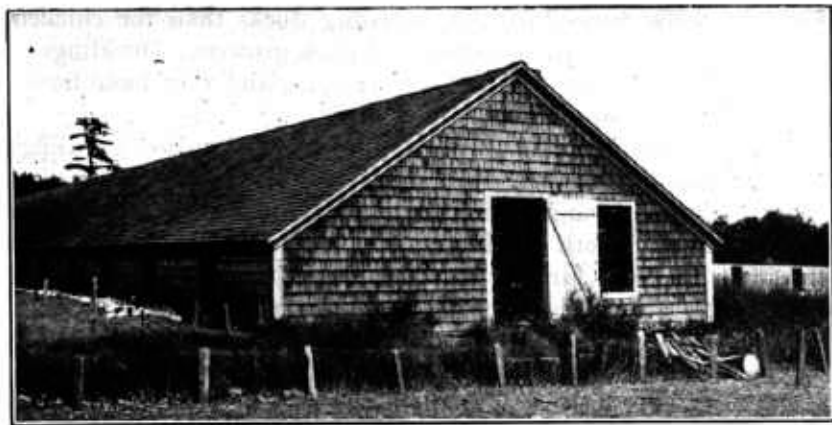


FIG. 12.—Duck house.

increased. Indian Runner ducks have been introduced as producers of commercial eggs, so they should be fed laying rations throughout the year if kept for egg production. The methods of feeding breeding and laying ducks, given later, are adapted to ducks used principally for the production of green ducklings, but can be readily adapted to breeds producing market eggs by feeding the laying ration throughout the year.

FEEDING DUCKLINGS.

Ducklings do not need feed until they are from 24 to 36 hours old, after which they may be fed five times daily on a mixture of equal parts, by measure, of rolled oats and bread crumbs, with 3 per cent of sharp sand mixed in the feed. About the third day this feed is changed to equal parts bread, rolled oats, bran, and corn meal; then after the seventh day to three parts of bran, one part each of low-grade wheat flour and of corn meal, 10 per cent of green feed, and 5 per cent of beef scrap, with about 3 per cent of sand or grit in all of the rations.

Feed four times daily after the seventh day until the ducklings are 2 or 3 weeks old, when they need be fed only three times daily. After the ducklings are a week old the grit or sand may be fed either in the mash or in a hopper, but the common practice is to feed grit in all duck rations. Beef scrap is not usually fed until the ducks are a week old, when about 5 per cent is added to the ration, which amount is gradually increased to 15 per cent by the end of the third week. Gradually increase the proportion of corn meal and decrease the bran until the ration becomes the fattening ration given below for those ducklings which are to be marketed. Those to be saved for

breeding should be given the duckling ration with the increased beef scrap (15 per cent), but not fed the fattening ration. They should also be given a good range where grass and running water are available; if confined to bare yards, considerable green feed and vegetables should be fed.

The ducklings to be marketed should be fattened for two weeks before killing on a ration made of three parts, by weight, of corn meal, two parts of low-grade flour or middlings, one part of bran, one-half part of beef scrap, with 3 per cent grit and 10 per cent green feed. Feed this mash three times daily, or use a mash of three parts corn meal, one part low-grade wheat flour, one part bran, 5 per cent beef scrap, and 3 per cent oyster shell, with the green feed and grit added. The green feed is sometimes left out of the ration during the last seven days of fattening, as it tends to color the meat and may produce a slightly flabby rather than a firm flesh; however, it is easier to keep the ducklings in good feeding condition on a mash containing green feed. Boiled fish may replace the beef scrap, but should only be fed up to within 2 weeks before they are killed, as it may give a fishy taste to their flesh. A considerable quantity of boiled fish is also fed in the mash to laying ducks in sections where the duck farms border on the water and where fish is available at a very small cost. This fish aids materially in reducing the cost of feeding.

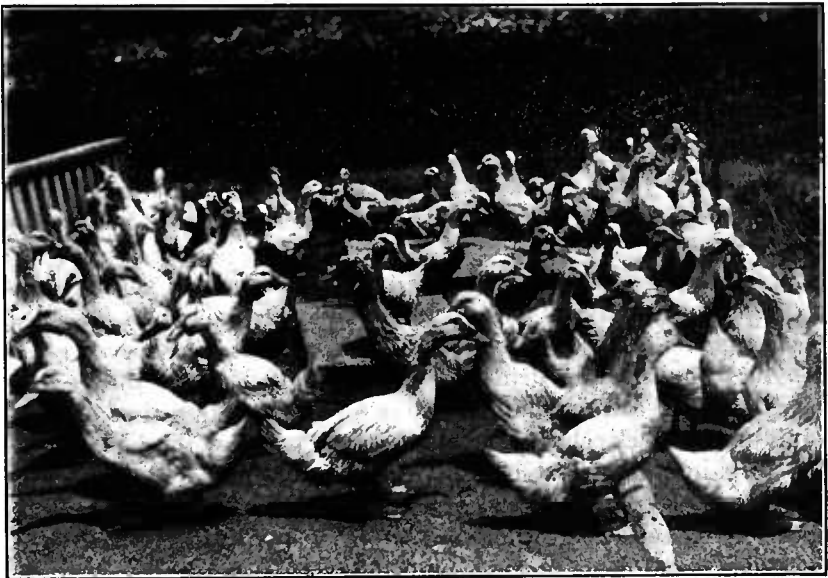


FIG. 13.—Pekin ducks about 7 weeks old in fattening pen.

Green ducks are marketed at from 8 to 12 weeks of age, according to their condition and weight. Two or 3 per cent of oyster shell is recommended in most fattening rations, but bone ash, ground or cracked bone, or bone meal would appear to be better mineral feeds to add to these mixtures. If milk is available at profitable feeding prices, the rations recommended for crate-fattened chickens would give good results in fattening ducklings, producing a well-bleached, milk-fed green duck. Celery seed is also used in fattening ducklings, as it is said to flavor the flesh.

FEEDING BREEDING AND LAYING DUCKS.

Breeding ducks, if not kept for the production of market eggs, should have a grass range if possible after the hatching season is over and be fed sparingly on a mash of one part, by weight, corn meal, two parts bran, one part low-grade wheat flour, one part green feed, 8 per cent beef scrap, and 3 per cent grit, given once or twice daily, with one feed of mixed grains; or the mash may be made of three parts, by measure, corn meal, four parts bran, two parts low-grade wheat flour, three-fourths of a part beef scrap, and two parts of green feed, with a small amount of grit and shell or mineral matter. Feed Pekin ducks for eggs beginning about December 1 on 1 pound of corn meal, 1 pound of low-grade flour or middlings, 1 pound of bran, 15 per cent of beef scrap, 15 per cent of vegetables or green feed, and some grit, feeding this mash twice daily, in the morning and at night, and also giving 1 quart of mixed corn and wheat to every 30 ducks at noon when they are laying heavily. These laying rations should be fed throughout the year to Indian Runners or to any breed of ducks kept principally for the production of market eggs. If the Indian Runner ducks are not laying they should be fed sparingly. All rations are by weight unless otherwise stated. Thirty laying ducks (Pekins) will eat about 10 quarts of moist mash at each meal.

Cut alfalfa, clover, rye, oats, and corn are used as soiling crops or green feed for ducks and ducklings, and are mixed in the mash. Ducklings and ducks are usually fed mash on flat feed boards rather than in troughs. The drinking water should be near the feed, so that the ducks can eat and drink at about the same time. Water fountains for ducks should be deep enough to allow the latter to get their bills into the water to wash sand or grit out of their nostrils.

The cost of feeding breeding Pekin ducks in 1911, according to reports from several growers, varied from \$1.75 to \$2.25 per duck, averaging about \$2. Wet or moist mash is used almost exclusively, but as they are more forcing than whole grains it might be advisable, in case many of the eggs are infertile, to feed more whole or cracked grains and less mash to ducks during the breeding season.

PREPARING DUCKS FOR MARKET.

Ducks may be dressed by dry picking, by scalding, or by steaming. Their condition is best judged by the amount of flesh on their backs. The methods used in dry picking poultry are also used with ducks, although the latter are harder to pick. The ducks are generally killed by sticking in the mouth or through the throat with a knife which has a narrow blade about 4 inches long, and then stunned by a blow on the back of the head with a short club; or the knife may be inserted just back of the eye. To facilitate handling in scalding and picking, a hook is run into the duck's mouth, coming out through the nostril. The long tail feathers are left on the ducks, the wings are picked to the first joint, and the neck halfway to the head. Long pinfeathers usually are removed with a dull knife, and the down sometimes is rubbed off with the moistened hand, burned with alcohol, or shaved with a very sharp knife. Large duck farms usually have pickers who devote their time entirely to the dressing of ducks during the killing season and are very proficient in this work.

Ducks may be steamed and picked, thus saving the feathers without artificial drying; and as duck feathers are of considerable value, their sale is quite an important item. The wing and tail feathers are pulled and thrown to one side before steaming the ducks. Six or eight ducks, which have been stuck and hung up to bleed, are placed on hooks in the top of a steam box or barrel which can be made airtight and steamed until the soft feathers on the breast come off easily. The length of time to leave them in the box depends on the temperature of the steam, varying from one-half to two minutes. Two sets of pickers usually pluck the ducks; one set, called the roughers, removing the bulk of the feathers, while the other set of pickers, called the pinners, removes the down and some of the smaller feathers. A good method for removing the down is to sprinkle powdered rosin over the duck's body and dip the bird into hot water, which melts the rosin so that the down and rosin can be rubbed off easily with the hand, leaving the body clean. When carefully steamed the birds rarely show any signs of scalded flesh. In some cases the ducks are hung in the steam box with the heads outside, thus preventing the head from being steamed; but when the birds are steamed as described above the heads are not discolored.

After the ducks are picked they are usually washed and put in ice water for an hour or two to cool and plump. Each layer of ducks is packed flat in ice, usually with the keels or breasts down, in barrels, or in boxes holding one dozen each. It costs from 5 to 6 cents apiece to pick ducks, but the body feathers and down usually are saved, as white feathers bring from 40 to 50 cents a pound when cured. Each duck yields about 2 ounces of marketable feathers.

Scalded feathers may also be dried and sold. The feed cost of growing Pekin ducks to 10 weeks of age, when they weigh from 5 to 6 pounds, is estimated at from 5 to 6 cents a pound (1915). Green ducks are marketed from April to November, and bring from 12 to 30 cents a pound when sold to commission men at wholesale. The highest prices are paid for the ducks marketed early in the spring and they decrease as the season advances and the supply becomes more abundant. The demand for green ducks has been built up in large cities in the East and on the Pacific coast, and there is very little demand for such ducks in small cities and towns. Many farmers market their ducks in the fall as spring ducks at a lower price per bird than is received for green ducks in the spring.

MARKETING DUCKS' EGGS.

The demand for ducks' eggs at a good price is limited and not nearly as general as the demand for hens' eggs. The quality of ducks' eggs on the average market was poor until people began to keep Indian Runner ducks and to build up a trade in first-class eggs. A good demand for ducks' eggs exists about Easter time at prices usually several cents a dozen higher than for hens' eggs, but during the balance of the year the average price for ducks' eggs has been about the same as for hens' eggs. Most buyers make no quotations for ducks' eggs except early in the spring. Since three ducks' eggs weigh about the same as four hens' eggs, ducks do not appear to be as profitable for the production of market eggs as fowls. A trade is gradually being established in some markets for fancy near-by ducks' eggs, which bring higher prices than hens' eggs, and the demand seems to be increasing. Pure white eggs are preferred and usually bring the highest price. These eggs should be marketed frequently, as they depreciate in quality more rapidly than hens' eggs, especially during hot weather. The market for eggs should be carefully investigated by those who intend to raise breeds of the egg-laying type of ducks, such as the Indian Runner.

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